

## Advanced National Seismic System

### Participation Policy and Roles and Responsibilities

This document establishes the policy of the U.S. Geological Survey's (USGS) Earthquake Hazards Program (EHP) governing participation in the Advanced National Seismic System (ANSS).

The Earthquake Hazards Reduction Act (P.L. 95–124 as amended) gives the USGS the Federal responsibility for providing notifications of earthquakes and its reauthorization in 2000 established the ANSS to modernize and expand the Nation's seismic monitoring infrastructure to provide accurate and timely data and information products for seismic events, including their effects on buildings and structures, employing modern monitoring methods and technologies.

1. The ANSS is a national system for the purpose of recording and reporting seismic activity within the United States and its Commonwealth and unincorporated Territories. The principal participants and elements of the ANSS are:
  - regional seismic networks operated by the USGS and state and university partners, and their associated operation and analysis centers;
  - the EHP's National Earthquake Information Center (NEIC);
  - the EHP's National Network ("backbone") and N4 network;
  - the EHP's National Strong-Motion Project (NSMP), supporting free field, structural, and geotechnical monitoring;
  - data management and distribution centers;
  - portable seismograph systems maintained by USGS science centers and ANSS partners;
  - the EHP's ANSS Depot, managed by the USGS Albuquerque Seismological Laboratory (ASL).
2. Regional seismic networks covering broad areas and with established data analysis centers are designated as **Tier 1 networks**; other networks with smaller scope of coverage and operations are **Tier 2 networks**.
3. USGS-operated and designated regional seismic networks are participants in the ANSS. Any regional seismic network receiving USGS EHP financial support via a cooperative agreement is a participant in the ANSS. USGS financial support is not a necessary condition for a regional seismic network to be designated as a participant in the ANSS.
4. The USGS shall seek the advice of the ANSS Steering Committee when a regional seismic network requests to become a new participant in the ANSS; however, the USGS reserves the right to make the final decision on these matters.
5. All ANSS participants are required to follow this and other ANSS policies and the derivative standards, procedures, and specifications as they pertain to each participant's scope of operations and authority under the ANSS.

6. As a national system, the ANSS improves and is enhanced through the cooperation and interaction of its participants. It is the EHP's intent to engage all ANSS participants in the development and propagation of standards, procedures, and technology. During significant earthquakes and earthquake sequences, EHP will assist regional seismic networks, subject to the availability of limited staff and funds.

## **Roles and Responsibilities of ANSS Participants**

The support of ANSS seismic networks by EHP through ANSS is a shared responsibility. Each entity has clearly defined roles and responsibilities to ensure that ANSS moves forward effectively and efficiently as a coordinated and integrated operation that produces high-quality data and information. All ANSS participants shall adhere to the ANSS policies and standards and can be called upon to provide technical expertise to ANSS through ANSS committees and working groups. Some of the more specific roles and responsibilities are listed below.

### *Earthquake Hazards Program Office*

- Oversees administration of external proposals and awards.
- Prioritizes ANSS focus areas.
- Provides coordination of ANSS-supported activities that includes conference calls, annual meetings, and formation of topical working groups.
- Coordinates on ANSS reporting requirements and ensures federal requirements are met.

### *An ANSS Participating Regional Seismic Network*

- Operates and maintains seismic stations individually or in conjunction with other networks (e.g., ASL and NSMP) that meet ANSS performance standards.
- Ensures delivery of waveform data to participating seismic networks and to ANSS designated archives.
- Serves as a source of designated earthquake monitoring and earthquake hazards expertise within its authoritative region. Serves as a regional point-of-contact with government agencies, public, media and end users of ANSS products and services.
- For a Tier-1 network, performs earthquake reporting within its authoritative region. Ensures near-realtime delivery of hypocentral and magnitude information for earthquakes meeting the ANSS response criteria and timely delivery of curated source parameter and situational awareness products to the ANSS Comprehensive Earthquake Catalog (ComCAT).

### *USGS Albuquerque Seismological Laboratory (ASL)*

- Operates several seismic networks as part of ANSS (e.g., GSN, IW, NE, N4, US).
- Performs QC on waveform and station metadata and establishes best QC practices for ANSS.
- Serves as the designated testing and evaluation facility for ANSS-supported sensors and dataloggers.
- Manages procurement of government furnished equipment (sensor and datalogger equipment) for ANSS.
- Provides technical expertise on best practices for broadband station installation and testing and waveform quality control.
- Manages the ANSS depot function of providing replacement equipment.
- Manages a set of portable seismic systems used in special studies and aftershock monitoring.

### *USGS National Strong Motion Project (NSMP)*

- Operates a national strong motion network in support of ANSS
- Provides technical expertise on best practices for free-field, reference and building strong-motion installations.
- Performs QC on strong-motion waveforms of engineering interest.
- Distributes strong motion waveform data and associated parameter data for use by the RSNs and NEIC, including posting of products to the Center for Engineering Strong Motion Data (CESMD).

*USGS Northern California Seismic Network (NCSN) and USGS-component of Southern California Seismic Network (SCSN)*

- Operate regional seismic networks in support of ANSS
- Manage and provide oversight and direction on AQMS and Station Inventory System (SIS) software development.
- Manage external contracts in support of ANSS development.
- Manage a set of portable seismic systems used in special studies and aftershock monitoring.

*USGS National Earthquake Information Center (NEIC), including related operations (e.g., operations under ShakeMap, PAGER, and HazDev)*

- Reports on significant earthquakes globally and is an authoritative source for information for earthquakes outside the U.S.
- In areas of the US not covered by ANSS-supported RSNs, performs earthquake reporting to ensure near-realtime delivery of hypocentral and magnitude information for earthquakes meeting the ANSS response criteria and timely delivery of curated source parameter and situational awareness products to the ANSS Comprehensive Earthquake Catalog (ComCAT).
- Acts as an earthquake reporting backup to ANSS-supported RSNs.
- Serves as a national source of earthquake monitoring and earthquake hazards expertise. Serves as a national point-of-contact with government agencies, public, media and end users of ANSS products and services.
- Provides secondary curation of source parameter and shaking products contributed to ComCAT.
- Provides oversight of developments, improvements, and content of ComCAT,
- Maintains and further develops Recent Earthquakes and related webpages, the Product Distribution Layer (PDL) and supporting web infrastructure.
- Acquires and distributes seismic network data from other networks (e.g., IM, IW, GSN, NE, N4, US) in support of ANSS.
- Provides backup ShakeMap for all RSNs based on authoritative solutions and parametric data distributed by NSMP and RSNs.
- Shares responsibilities with the regional networks to ensure that configuration and metadata match the authoritative maps.
- Provides technical guidance on ShakeMap science and operations.
- Coordinates testing of regional network capabilities and maintains response contacts.